

WHAT IS CLAIMED IS:

1. A method to screen for drugs which are useful in treating a person with a mutation in *HERG*, wherein said mutation is one which results in a cysteine at amino acid residue 572, an aspartic acid at amino acid residue 588, a valine at amino acid residue 614, an alanine at amino acid residue 630, or a mutation shown in Table 7, said method comprising:
 - a) placing a first set of cells expressing *HERG* with a mutation, wherein said mutation is a cysteine at amino acid residue 572, an aspartic acid at amino acid residue 588, a valine at amino acid residue 614, an alanine at amino acid residue 630, or a mutation shown in Table 7, into a bathing solution to measure a first induced K^+ current;
 - b) measuring said first induced K^+ current;
 - c) placing a second set of cells expressing wild-type *HERG* into a bathing solution to measure a second induced K^+ current;
 - d) measuring said second induced K^+ current;
 - e) adding a drug to the bathing solution of step (a);
 - f) measuring a third induced K^+ current of cells in step (e); and
 - g) determining whether the third induced K^+ current is more similar to the second induced K^+ current than is the first induced K^+ current, wherein drugs resulting in a third induced K^+ current which is closer to the second induced K^+ current than is the first induced K^+ current are useful in treating said persons.
2. The method of claim 1 wherein cells of said first set of cells are transfected with a mutant *HERG* wherein said mutant *HERG* encodes a *HERG* protein with a cysteine at amino acid residue 572, an aspartic acid at amino acid residue 588, a valine at amino acid residue 614, an alanine at amino acid residue 630, or a mutation shown in Table 7.
3. The method of claim 1 wherein cells of said second set of cells are transfected with nucleic acid encoding wild-type *HERG*.
4. The method of claim 1 wherein said first set of cells or said second set of cells is obtained from a transgenic animal.